II. THE BELLS' CONCEPTUAL CRITICISMS OF TELRIC ARE BASELESS.

The Bells' criticisms of TELRIC are as empty as their case for reproduction costs. Even if the Bells could demonstrate some shortcomings with TELRIC—which, as explained below, they have not—that would not justify abandoning that standard in favor of the fundamentally flawed reproduction cost standard. The ultimate question for the Commission is not whether TELRIC is perfect, but whether the proposed alternatives are better. For the reasons explained above, that is not a close question.

In all events, the Bells' attacks on TELRIC are simply a repackaging of the arguments that were previously rejected by the Commission and the Supreme Court. Indeed, as the Supreme Court recognized, the Bells' real complaint is not with TELRIC, but with *any* pricing standard that replicates the workings of a competitive market and excludes the costs of inefficient operations and network design.

A. TELRIC Is Fully Compensatory In Theory.

The Bells' main attack on TELRIC is essentially an attack on competitive markets. The Bells argue that TELRIC assumes the continual reconfiguration of networks to reflect advances in efficient technology and network design, an assumption that cannot be achieved in reality because network investments made by incumbent carriers are continually rendered obsolete by technological advances. Incumbent carriers, the Bells contend, cannot take full advantage of these new technological advances because much of the network investment is sunk. Thus, the argument goes, incumbents never can achieve the level of efficiency that a new entrant (or an "ordinary" firm) could achieve; ergo, TELRIC-based rates systematically prevent them from recovering efficiently incurred costs. BellSouth at 10-11, 24-25; NERA (BellSouth) Decl. ¶¶ 19, 45, 72-74; Qwest at 22-23; SBC at 2-3, 15-16; Aron-Rogerson (SBC) Decl. at 19-21; Verizon at 4, 35-39; Kahn-Tardiff (Verizon) Decl. ¶¶ 17-20; Shelanski (Verizon) Decl. ¶¶ 6-11, 20-24, 36.

The same argument, however, was a centerpiece of the Bells' unsuccessful challenge to TELRIC at the Supreme Court:

> [The incumbents'] argument is that TELRIC will result in constantly changing rates based on ever cheaper, more efficient technology; the incumbents will be unable to write off each new piece of technology rapidly enough to anticipate an even newer gadget portending a new and lower rate. They will be stuck, they say, with sunk costs in less efficient plant and equipment, with their investment unrecoverable through depreciation, and their increased risk unrecognized and uncompensated.

Verizon, 535 U.S. at 518. The Supreme Court found this argument unpersuasive in 2002. *Id.* at 504-07. The Bells have offered no better reason for crediting it here.

First, the Bells continue to overstate the level of efficiency demanded by TELRIC. As the Supreme Court observed, TELRIC does not assume optimal efficiency. *Verizon*, 535 U.S. at 504-07. Most notably, TELRIC takes as given the incumbents' existing wire center locations even where an efficient carrier would employ a different architecture. *Id.* at 505. Thus, TELRIC cost models assume the same number of switches an incumbent employs (even when fewer switches might lower overall costs) and the need to connect those switches with transport facilities. Further, the location of the existing wire centers places a significant constraint on "optimizing" the placement of outside plant and interoffice transport. *Id.*

Second, TELRIC-based rates ordinarily remain in effect for several years. Thus, advances in technology that occur over that period are not "automatically" reflected in UNE rates, but are incorporated in subsequent rate proceedings only after a significant lag. *Id.* at 505-06.

Third—and most fundamentally—TELRIC-based rates would be fully compensatory *even if* TELRIC, as implemented, effectively required the continual and instantaneous readjustment of UNE rates to reflect the full potential effect of all changes in technology and other cost determinants, without regard to any existing constraints the incumbents face in optimizing their networks in the short run. Even the most rigorous and uncompromising form of

the TELRIC standard would be no more onerous than the pricing constraint imposed on incumbent firms by markets that are fully competitive or contestable. As Professor Willig explains, in competitive or contestable markets, a company can charge prices for services that cover only the costs of providing those services in the most efficient manner, even if the company actually paid more for the equipment it uses to provide that service. Willig Decl. ¶¶ 42-43; Willig Reply Decl. ¶¶ 60-62. Competition in such markets ruthlessly disallows any recovery of historical costs, for no current rival will refrain from competing via a final-product price that covers only the forward-looking costs of its investment, whether or not these costs exceed historical costs. Because economic efficiency requires the same prices that would be set in competitive or contestable markets, UNE prices must reflect the forward-looking costs of efficient operation as well, not historical, embedded or reproduction costs. Willig Decl. ¶¶ 19-31; Willig Reply Decl. ¶¶ 60-62.

Ultimately, the Bells' economists confirm this. They agree that (1) the goal of UNE pricing is to "replicate" the workings of competitive markets, Weisman (Qwest) Decl. ¶ 40; NERA (BellSouth) Decl. ¶ 73; (2) in fully competitive or contestable markets prices are driven down toward long run costs, Shelanski (Verizon) Decl. ¶ 35; and (3) in the long run, all inputs are variable, NERA (BellSouth) Decl. ¶ 55. These concessions are well taken because their logic is unassailable. A firm that fails to adopt current technologies or practices that lower its costs—or to set its prices at levels that fully reflect current technologies or practices—renders itself vulnerable to competitors or entrants that do so. Hence, the threat of such entry in competitive or contestable markets necessarily caps the rates that incumbents can charge at the level of the lowest costs achievable by current technology and practices. As BellSouth's economists aptly explain, "[i]f competitors can deploy new services or the same services at lower costs,

particularly if the incumbent fails to do so, then there will be greater pressure [for the incumbent] to accelerate deployment of new technologies into the network." NERA (BellSouth) Decl. ¶ 74.

The TELRIC standard is compensatory in the same way that pricing in fully competitive or contestable markets is compensatory. Forward-looking investment decisions are based on the firm's best expectations of future trends in prices, demand, technological innovation, and equipment values. Willig Reply Decl. ¶¶ 66-68. Thus, if a firm in a competitive market expects these prices and values to decline, the firm will reflect this expectation in the prices it offers to pay for current equipment and the depreciation charges the firm recovers through the prices it charges its own customers. The Commission's TELRIC rules require state commissions to reflect the same considerations in determining the incumbent's depreciation charges and cost of capital. Hence, TELRIC pricing, just like competitive market pricing, provides for full *ex ante* compensation of investments. Gregory Rosston and Roger Noll, *The Economics of the Supreme Court's Decision on Forward Looking Costs*, I REVIEW OF NETWORK ECONOMICS 81, 84 (Sept. 2002) ("[I]f depreciation lives and risk adjustment rates are calculated reasonably accurately, firms will be able to recover the costs of efficient investments [and] [t]hus the TELRIC approach, theoretically, is able to cope with the problems that worry its opponents.").

Of course it is always possible that previous expectations will turn out to be incorrect and for a firm to find, afterwards, that it has incurred uncompensated costs. But this is an *ex post* risk that any firm in a competitive market must face, and a risk that the 1996 Act therefore requires incumbents to face as well. Willig Reply Decl. ¶¶ 66-68. In the real world, firms almost always make investment decisions in an environment of uncertainty. Neither competitive markets nor TELRIC can immunize an incumbent against unforeseen losses.

Despite the virulence of the Bells' anti-TELRIC rhetoric, the Bells' economists ultimately concede that the "theor[y]" of TELRIC is sound and that, if depreciation lives and

capital costs reflect appropriately anticipated declines in the value of assets after their acquisition, TELRIC-based rates will allow the incumbents full recovery of their efficient investment. Kahn-Tardiff (Verizon) Decl. ¶ 21; Shelanski (Verizon) Decl. ¶ 14; *see also* Kahn-Tardiff (Verizon) Decl. ¶ 19 (conceding that even where investment requires "heavy sunk costs" and there is "continuous technological change" that can be expected to devalue that investment, firms will invest in the "most recent technology from the ground up" if they can charge rates that cover forward-looking "depreciation . . . and rates of return"). Instead, these economists retreat to a second line of defense: that "in practice" regulators have not set the appropriate, forward-looking depreciation lives. Kahn-Tardiff (Verizon) Decl. ¶ 21. But the solution to this problem (if it existed) would not be to jettison TELRIC, but simply to implement it with appropriate depreciation lives.

Moreover, the Bells have failed to establish even this more modest criticism. The incumbent economists offer nothing more than rank speculation for their empirical claim that existing depreciation lives are inadequate. As AT&T's experts show, the hard evidence is to the contrary. Lee Decl. ¶¶ 15-21 & Att. 4-5; Willig Reply Decl. ¶ 72. For example, incumbent depreciation reserves have been *increasing*. *Id.* As the Commission has recognized, "[t]he depreciation reserve is an extremely important indicator of the depreciation process because it is the accumulation of all past depreciation accruals net of plant retirements. As such, it represents the amount of a carrier's original investment that has already been returned to the carrier by its customers." *AAD Report* at 5-6. Thus, this increase in depreciation reserves is powerful evidence that existing Commission-prescribed depreciation lives are, if anything, too short.

B. TELRIC Is Fully Compensatory In Fact.

Verizon and SBC have filed "empirical" analyses purporting to show that UNE rates have failed to provide adequate compensation to cover incumbents' historical costs. Verizon at

94-96; Garzillo (Verizon) Decl.; Aron-Rogerson (SBC) Decl. at 28-32. These analyses are as unsound as the Bells' theoretical arguments.

First, the comparison that underlies these analyses is meaningless. ARMIS data are records of the Bells' book or embedded costs, maintained as required by the Commission's uniform system of accounts. These data are irrelevant to any rational determination of forward-looking costs, *inter alia*, because ARMIS records include assets that (1) no longer even exist at any identifiable location in the Bells' network; (2) are now excessive, inefficient or obsolete; (3) have been removed from the network or abandoned in place (e.g., copper cable "overlaid" with fiber cable and taken out of service) without being removed from the company's account books; or (4) are used jointly or in common not only to provide UNEs, but also to provide other non-UNE or non-regulated outputs, such as long distance or broadband service: Menko, McCloskey & Brand Reply Decl. ¶ 11; Selwyn Reply Decl. ¶¶ 30, 50.

The Supreme Court recognized these problems in *Verizon*. The book cost data maintained by the incumbents "were geared to maximize the rate base with high statements of past expenditures and working capital, combined with unduly low rates of depreciation," *Verizon*, 535 U.S. at 469, 499. Hence, the "'book' value or embedded cost of capital presented to traditional ratemaking bodies" was grossly overstated. *Id.* at 517-18. Moreover, aside from the manipulation of the rate base and depreciation rates, any overinvestment representing a "cost difference" between embedded costs and forward-looking costs

> is an inefficiency, whether caused by poor management resulting in higher operating costs or poor investment strategies that have inflated capital and depreciation. If leased elements were priced according to embedded costs, the incumbents could pass these inefficiencies to competitors in need of their wholesale elements, and to that extent defeat the competitive purpose of forcing efficient choices on all carriers whether incumbents or entrants. The upshot would be higher retail prices consumers would have to pay.

Id. at 511-12.

These problems are exacerbated, not cured, by price cap regulation. As Dr. Selwyn explains (¶¶ 9-12), price cap regulation at the state level gives the incumbents powerful incentives to shift costs to "regulated" services and away from services deemed competitive. This in turn results in excessive costs being recorded in the books of account that are used to generate the purported cost of the UNEs at issue.

In this regard, the Bells are their own worst enemy. In seeking to defend their special access services, they have argued that rates of return for those services derived from ARMIS data are "economically irrational" and do not reflect economic costs.[4] These are the same ARMIS data on which the Bells base their empirical comparisons of TELRIC prices and RBOC "costs."

But the flaws in the Verizon and SBC analyses go well beyond their reliance on ARMIS data. Verizon's analysis, sponsored by Patrick Garzillo, relies upon numerous assumptions, data selections, methods and calculations, many of which are clearly faulty. Menko, McCloskey & Brand Reply Decl. ¶¶ 13-41. To begin with, the data relationships relied on by Verizon (developed from the ARMIS 43-04 report) are likely no longer accurate due to the Commission's order freezing category relationships and separations factors as of 2000. *Id.* ¶ 15. Moreover, Verizon's calculation of the purported costs associated with the provision of UNE loops and UNE-Platform (the numerator in Verizon's development of unitized costs) are tainted by errors, including in the calculation of loop, switch and transport investment and non-plant specific expenses. *Id.* ¶¶ 16-34. Further, Verizon's calculations of loop count (the denominator in developing unitized costs) have demonstrably understated the number of loops. *Id.* ¶¶ 35-41.

The Aron-Rogerson comparison of UNE-P prices and embedded costs is also worthless. SBC Comments, Exhibit A. Even putting aside the irrelevance of comparing TELRIC to

[4] *In re AT&T Corp. et al.*, D.C. Cir. No. 03-1397, Response of Intervenors in Opposition to the Petition for a Writ of Mandamus, at 13 (footnotes omitted) (filed January 9, 2004).

embedded costs, *see* Menko, McCloskey & Brand Reply Decl. ¶¶ 11-12; Selwyn Reply Decl. ¶ 30, the SBC analysis depends on a host of assumptions, cost allocations and financial calculations that are insufficiently presented, let alone explained, making it impossible for any party or the Commission to audit the analysis. For example, the analysis does not specify whether the base ARMIS data used reflected total company results (*i.e.*, encompassing jurisdictionally interstate as well as intrastate services), intrastate only results following jurisdictional separations, intrastate results exclusive of non-regulated operations or some combination of these alternatives. With respect to other aspects of the analysis, readers are told only that (1) the ARMIS data were "adjusted by LECG analysts" in some unspecified fashion; (2) that revenues for comparison were drawn from an entirely separate source (the investment house Commerce Capital Markets) that may or may not be consistent with the services and outputs reflected in the cost data; and (3) capital expenditures were subject to an allocation process that has not been presented. Aron-Rogerson (SBC) Decl. at 29-31.

C. Carrier-of-last-resort ("COLR") Obligations Do Not Call TELRIC Into Question.

After arguing vociferously that their networks are the paradigm of efficiency, the Bells reverse field, arguing that their existing inefficiencies should be excused because of carrier-of-last-resort ("COLR") obligations. *See, e.g.*, SBC at 25; BellSouth at 8; NERA (BellSouth) Decl. ¶¶ 22-25, 48. COLR obligations, the Bells assert, force them to maintain more spare capacity (and thus lower fill factors) than they would otherwise choose. Thus, argue the Bells, the competitive market standard is unfair to them because regulation constrains them from achieving the lowest possible cost structure.

This argument suffers from several independent flaws. Foremost, it rests on nothing but empty speculation. The Bells have offered not a shred of evidence that state regulators require them to maintain substantial excess capacity, or that existing retail rates fail to cover those extra

costs. Nor is there any reason to attribute the bloated level of spare capacity that the Bells have advocated in state UNE pricing proceedings to any operational requirements imposed by state regulators. The Bells can point to no law that requires them to maintain a level of capacity necessary if every consumer in the United States immediately demanded telephone service from the Bells. Rather, what is generally required is sufficient capacity to meet reasonably anticipated demand.

Finally, even if the Bells had documented that costs imposed by COLR obligations are not fully recovered through the Bells' retail rates, that would not be grounds for recovering such costs via wholesale UNE rates. Willig Reply Decl. ¶ 76. As the Commission properly recognized in the past, such a surcharge would potentially impede the development of local competition. *Local Competition Order* ¶ 705. Rather, these costs (if any) should be recovered through appropriate, competitively neutral universal service contributions as required by the 1996 Act. *Id.* ¶ 707; *see also* Gregory Rosston and Roger Noll, *The Economics of the Supreme Court's Decision on Forward Looking Costs*, 1 REVIEW OF NETWORK ECONOMICS 81, 86 (Sep. 2002) ("Any pricing method that allows the mistakes of the past to be made up in UNE prices that are too high is inherently anticompetitive. . . . The FCC attempted to deal with [the problem of inefficient regulatory obligations] by requiring a competitively neutral fee to make up for any embedded costs that are not paid for through the combination of ILEC wholesale and retail sales.").

D. The Assumptions Of TELRIC Are Internally Consistent.

The Bells also claim that the Commission's TELRIC rules are internally inconsistent. Specifically, the Bells argue that:

(1) The TELRIC assumption of a "competitive" market contradicts the TELRIC assumption that the supplier of UNEs achieves the economies of scale and scope

generated by serving all customer locations within a particular geographic area. Instead, the Bells argue, one should assume a smaller network that lacks the economies of scope and scale enjoyed by the incumbent carriers.

(2) The TELRIC assumption of a "competitive" market also requires a cost of capital that compensates for the business risks of a market with multiple facilities-based competitors.

(3) "Consistency" with the forward-looking cost standard requires that UNE prices include the "full costs" of "obtaining the rights of way and authorizations needed to build the network today from scratch."

See BellSouth at 14, 22-23; SBC at 3, 13-20, 57; Aron-Rogerson (SBC) Decl. at 18-21; Shelanski (Verizon) Decl. ¶ 14; Kahn-Tardiff (Verizon) Decl. ¶¶ 16-17. These arguments share a common flaw: they assume that TELRIC does or should seek to replicate the performance of markets that are perfectly competitive, in that they have numerous facilities-based competitors. This is incorrect.

The existence of multiple facilities-based within a market, although generally a sufficient condition for effective competition, is not a necessary condition. Markets also achieve competitive results when effectively *contestable*. Willig Decl. ¶¶ 23-24; Willig Reply Decl. ¶ 78. The contestable market standard "offers a generalization of the notion of purely competitive markets, a *generalization* in which fewer assumptions need to be made to obtain the usual efficiency results. Using contestability theory, economists no longer need to assume that efficient outcomes occur only when there are large numbers of actively producing firms. What drives contestability is the possibility of costlessly reversible entry." Willig Decl. ¶ 23 (citing authorities). As Professor Willig explained in his initial declaration, contestability doctrine is

more consistent with the structure of the local telephone market, and thus a more appropriate baseline for assessing "competitive outcomes." *Id.* ¶ 24; *see also* Willig Reply Decl. ¶ 78.

In a fully contestable market, service is provided by a single incumbent firm, and prices converge to LRIC. This framework is particularly apt here, for the network elements at issue are characterized by steep economies of scale and scope (*Triennial Review Order* ¶¶ 87-90), and often are provided by a single firm. Thus, the "single carrier" assumption reflected in the Commission's directive that TELRIC rates reflect all economies of scale and scope available to the incumbent is fully consistent with the competitive outcome that the TELRIC standard seeks to emulate.[5] Willig Reply Decl. ¶ 79.

The same logic disposes of the notion that consistency with TELRIC requires a cost of capital high enough to compensate for the risks of a market with multiple facilities-based competitors. Again, in a fully contestable market, the incumbent has its prices constrained not by the presence or competitive risks of multiple facilities-based rivals, but by the threat of competitive entry if (and only) the incumbent raises its prices above long run incremental costs. Willig Decl. ¶¶ 23-34; *see also* Willig Reply Decl. ¶¶ 78.

In light of these considerations, other regulatory bodies that have adopted rate standards designed to replicate the performance of perfectly competitive or contestable markets (*e.g.*, TELRIC and stand-alone cost) have *not* adopted the extravagant risk model that Verizon and the other Bells propose. Instead, those regulators have chosen to use cost of capital measures that reflect the forward-looking risks *actually* faced by the incumbent regulated monopolies. *See Coal Rate Guidelines—Nationwide*, 1 I.C.C.2d 520, 534-37 (1985), *aff'd, Consolidated Rail Corp. v. United States*, 812 F.2d 1444 (3rd Cir. 1987) (implementing stand-alone cost test with

[5] In reality, UNE rates are set in a more conservative manner than dictated by pure TELRIC theory. Modern TELRIC models typically assume only the incumbent's existing demand, not the demand of all existing, facilities-based local carriers.

cost of capital based on analyses of risks and capital costs of *incumbent* market-dominant carriers). Notably, in his above-described testimony endorsing stand-alone cost, Dr. Kahn never suggested that consistency with the "blank slate" assumptions of instantaneous entry and contestability underlying the stand-alone cost test required a risk premium over the cost of capital sufficient to compensate for the risks actually facing the incumbent carriers.

The supposed inconsistency asserted by the Bells concerning the costs of "obtaining the rights of way and authorizations needed to build the network today from scratch" is also illusory. Although their point is somewhat unclear, the Bells appear to be contending that the costs of obtaining such rights today would be substantially greater than the Bells themselves incurred in obtaining them, because easements and other real estate costs have skyrocketed over the years. This contention is fatally flawed. Appropriate application of the contestability standard seeks to determine the prices that an incumbent carrier would charge on the (counterfactual) assumption that there were no barriers to entry. Willig Reply Decl. ¶¶ 80-81. Under this framework, the appropriate costs are the costs that the incumbent would incur in efficiently acquiring the necessary rights-of-way. *Id.*

In this regard, the fees that municipalities and landlords charge competitive carriers currently for rights-of-way are not the appropriate benchmark for determining TELRIC-based rates. These entities have strong incentives to grant access to the "first mover" carrier, for all municipalities and landlords want telephone services to be provided to their residents. However, as the Commission confirmed in its *Triennial Review Order*, municipalities and landlords have little incentive to offer the same favorable terms to second mover competitive carriers and instead insist on discriminatory conditions for the necessary access. *Triennial Review Order* ¶¶ 205, 303-306. These are exactly the type of entry barriers that are not included in an

appropriate LRIC study that seeks to replicate competitive market outcomes. Willig Reply Decl. ¶ 81.

Notably, other regulators have reached this same conclusion in analogous circumstances. In applying the stand-alone cost standard to construction expenses, the Surface Transportation Board ("STB") and its predecessor, the Interstate Commerce Commission ("ICC"), have repeatedly disallowed similar costs when there was no evidence that the incumbent itself had incurred such costs—and, therefore, requiring a new entrant to bear such costs would constitute an impermissible barrier to entry. Thus, the ICC/STB have excluded from the hypothetical carrier's costs an "assemblage factor" (a premium paid to purchase contiguous parcels of land for a right-of-way), grade-crossing costs (costs associated with constructing bridges or overpasses across non-natural barriers such as public highways and railroad tracks) and expenses for permits, licenses, and compliance with environmental standards because the incumbent railroad did not encounter the same costs and obstacles. For example, the STB/ICC has disallowed costs for constructing bridges or overpasses across public highways because the incumbent railroad was conducting operations in that area before the highways were built – and the State, not the incumbent, had paid for any bridges or overpasses. Allowing costs that the incumbent itself did not pay, the STB/ICC ruled, would violate the fundamental assumption of unimpeded entry and exit underlying the theory of contestability. *See, e.g. Arizona Public Service Co. v. Atchison, Topeka & Santa Fe Ry. Co.*, 2 S.T.B. 367, 385-387 (1997); *West Texas Utilities Co. v. Burlington Northern R.R. Co.*, 1 S.T.B. 638, 668-671 (1996), *aff'd sub nom. Burlington Northern R.R. Co. v. Surface Transportation Board,* 114 F.3d 206, 214 (D.C. Cir. 1997); *Coal Trading Corp. v. Baltimore & Ohio R.R. Co.*, 6 I.C.C.2d 361, 412-414 (1996); *Bituminous Coal – Hiawatha, Utah, to Moapa, Nevada*, 6 I.C.C.2d 1, 52-54 (1989).

E. TELRIC Properly Reflects Relevant Geographic And Locational Constraints.

The Bells contend that TELRIC fails to reflect relevant endogenous constraints that any carrier would face in providing telephone services, such the need to deploy outside plant to actual customer locations and the geographic constraints carriers face in laying outside plant. *See* NERA (BellSouth) Decl. ¶ 47; Qwest at 7-8, 30-32; SBC at 4, 20-24; Aron-Rogerson (SBC) Decl. at 18-19. This claim too is baseless.

This issue goes not to the merits of the TELRIC standard, but rather to the design of the cost models that implement TELRIC. Nothing in the TELRIC standard requires that UNE rates ignore relevant real world considerations that impact costs, such as where customers reside or physical barriers that might impact deployment of plant to customers. Willig Decl. ¶ 56. Thus, at most, the Bells' complaint is that implementation of TELRIC is faulty.

But even as to this narrower claim, the facts belie the Bells' histrionics. As Mr. Klick describes, TELRIC models are becomingly increasingly sophisticated in accounting for customer locations, customer services, geography and topography. Klick Decl. ¶¶ 56-57; Klick Reply Decl. ¶ 57. For example, modern TELRIC models capture cost associated with density differences with extreme precision. Bryant Essay at 11. Indeed, TELRIC cost studies often rely on "geocoded" data that provides the *exact* location of every customer. This in turn allows modelers to increase the realism with which they account for natural geographic obstacles such as rivers and mountains. Except in the most extreme cases, customers generally live in "clusters" located in geographic areas where the terrain is suitable for building (indeed, customers usually live in homes or apartment buildings). Customers are not clustered where natural features such as lakes or mountains would prevent building. Accordingly, modern TELRIC models that rely on detailed customer location data automatically account for natural obstacles to building telephone plant. Moreover, in each cluster (and where plant must be placed

to connect clusters), the cost models expressly incorporate highly detailed data regarding local soil conditions (rock, sandy, dirt), water table depths, and other terrain characteristics that affect the cost of building and installing telephone plant. Klick Decl. ¶ 57.

Of course, no cost model cannot atomistically replicate every feature of "the real world." *Id.* ¶ 46. Nor need it. The entire point of the exercise is to estimate the efficient costs of providing telephone service. To the extent that this can be done accurately by using simplifying assumptions, as all cost models do, it is perfectly appropriate to do so.

For example, although the amount and type of telephone plant reflects barriers that might occur within geographic areas where customers are clustered, the data needed to identify all such obstacles are obviously lacking. Accordingly, to ensure that sufficient telephone plant is reflected in the modeled network, modern TELRIC models already use algorithms and assumptions that build in significant amounts of extra cable for routing around and over obstacles. Likewise, "right angle routing" is a technique that assumes that cable travels only in straight lines (along north, south, east or west axes), and turns only at right angles. This assumption models how roads in most cities and towns are built. Moreover, where it departs from reality, it tends to produce estimates of cable plant that are conservatively high, because nonrectilinear routes generally reflect the existence of alternative shorter (diagonal, or "as the crow flies") routes. *See, e.g., Virginia Arbitration Order* ¶ 180.

Finally, AT&T must emphasize that concerns of geographic accuracy could not justify adopting a reproduction cost standard even if (contrary to fact) such a standard could be implemented with atomistic detail. Because reproduction costs are irrelevant to competitive price-setting under the Act, greater precision in their estimation is pointless. Willig Reply Decl. ¶ 52. As Verizon witness Alfred Kahn has noted, "[a]n approximation, even one subject to a wide margin of error, to the correct answer is better than the wrong answer worked out to seven

decimal places." 1 Alfred Kahn, THE ECONOMICS OF REGULATION 199 n. 39 (1970) (quoting William Vickrey, winner of the Nobel prize in economics in 1996). In any event, as described above, the Bells simply do not maintain records that can accurately describe, in any readily retrievable and useable fashion, what plant is in the ground today. And that is why, despite their claims about how accurate an "existing cost" model would be, the Bells have yet to proffer one to the Commission.

F. TELRIC Is Practical To Administer.

The Bells also claim that, because TELRIC seeks to determine the costs of building a "hypothetical" efficient network, TELRIC cost models are inherently hard to verify and easy to manipulate. Qwest at 7; Weisman (Qwest) Decl. ¶¶ 22-23; SBC at 20-24, 57-58; Verizon at 7-8, 28; Shelanski (Verizon) Decl. ¶ 18. Here again, the Bells pursue a claim that the Supreme Court considered and properly rejected just two years ago. *See Verizon*, 535 U.S. at 522 (considering and rejecting the Bells' claim that "TELRIC is too complicated be practical"). As the Court noted, "battles of experts are bound to be part of any ratesetting scheme," and "relative ease of calculation" is an arena where TELRIC is superior, not inferior, to the incumbents' alternative standards, which "preserve home-field advantages for the incumbents." *Id.*

In this proceeding, the Bells advance four arguments: (1) TELRIC-based rates vary widely from state to state, and these variations do not correlate with state-to-state variations in costs; (2) TELRIC-based rates have been generally trending downward since 1996; (3) state commissions in Qwest's territory made a variety of errors in setting the inputs to Qwest's UNE prices; and (4) the TELRIC standard allows state commissioners to set unduly low rates through opportunism or cowardice. Qwest at 13-14, 54; SBC at 20-24; Verizon at 7. The incumbents' new arguments are no more credible than their predecessors.

State-to-State Variations in UNE Prices. The "variations" in UNE rates claimed by the Bells have little or nothing to do with any fault with TELRIC. The scheme of "cooperative federalism" embodied in the 1996 Act, and the fact that costs differ significantly from state-to-state, inevitably will cause state-to-state variations in UNE rates regardless of what standard is employed. As the Supreme Court stressed in *Iowa Utilities Board*, the Commission's role in the 1996 Act is merely to set general standards for determining UNE rates: "[i]t is the States that will apply those standards and implement that methodology, determining the concrete result in particular circumstances." *AT&T Corp. v. Iowa Utilities Bd.*, 525 U.S. 366, 384 (1999). The variation that naturally results from this decentralized regulatory scheme, administered by 51 separate decisionmaking bodies, was further exacerbated by the substantial uncertainty over the interpretation (and even the survival) of TELRIC during the six years when the Bells tried to overturn the *Local Competition Order* in the courts. Klick Reply Decl. ¶¶ 104-05. Further, as Mr. Klick explains, substantial variation in UNE rates can result from differences in the amount of discovery permitted by the state commissions—another factor totally unrelated to TELRIC and inherent in the 1996 Act's allocation of ratesetting responsibilities. *Id.* ¶ 106.

The econometric analyses offered by SBC witnesses Aron and Rogerson and USTA witnesses Eisenach and Mrozek actually devastate the Bells' case. Drs. Aron and Rogerson assert that their regression analyses failed to show any adequate link between ARMIS embedded costs, Synthesis Model unit costs, or average line densities, on the one hand, and UNE-P prices on the other. Aron-Rogerson (SBC) Decl. at 36-38. From this, the authors conclude that "state commissions exercise their discretion in ways that are random with respect to costs." *Id.* at 36. Aron and Rogerson base this claim on a bizarre definition of statistical linkage: they assert that no statistically significant linkage exists unless the R-squared value is close to one—*i.e.*, that the independent variables account for nearly *100 percent* of the variation in the dependent variable.

This is absurd. Statistical relationships do not require that the independent variables in the regression—particularly a regression with only a handful of independent variables—account for anything approaching 100 percent of the variation in the dependent variable. Judged by a more meaningful and accepted test of statistical linkage, the regression coefficients and the *t* statistics, Aron and Rogerson's results actually show that there is a very strong and statistically significant relationship—at confidence levels of 95 percent to 99 percent—between UNE-P price and each of the three independent variables. Selwyn Reply Decl. ¶¶ 32-42. In short, Aron and Rogerson's regression analyses showed *precisely the opposite of what they were trying to prove*. *Id.* ¶ 41.

The Eisenach-Mrozek regression analysis proffered by USTA also refutes, rather than supports, their sponsors' position. The regression results show that the correlation between costs as measured by the HCPM model and UNE-P prices is in the range of 0.5, and *t*-statistic values are extremely high, reflecting confidence levels in excess of 99.99 percent. Selwyn Reply Decl. ¶¶ 43-46. In plain English, these results mean that the HCPM-based cost estimates explain approximately *half* of the reported state-to-state variation in UNE-P prices. This is a very powerful correlation, particularly because most of the UNE rates were based on cost models *other than* the HCPM, and because the HCPM uses nationwide expense factors and other averaged input values rather than more individualized and state-specific data. *Id.* ¶¶ 44-46.

Downward Trend in UNE Prices over Time. The downward trend towards lower UNE rates over time is also no evidence that TELRIC is flawed. *Cf.* Qwest 11-12; Verizon 6-7. To be sure, in the earliest TELRIC rate proceedings, state commissions did produce widely divergent rates; indeed, some states adopted absurdly high rates for certain UNEs. Many of the rate reductions are simply the result of state commissions climbing the "learning curve" and identifying previously overlooked deficiencies in the "TELRIC" studies submitted by the ILECs. Klick Reply Decl. ¶¶ 86-101. Further, in many instances, the rate decreases ordered are the

result of declines in input prices, increases in demand, or the combination of two. *Id.* The Bells can hardly argue otherwise, for many of the rate decreases that the Bells now assail were voluntarily proposed by the Bells themselves. *Id.* ¶ 87. This is particularly true for local switching, as the Bells reduced their rates in order to mitigate their losses from "reciprocal compensation" arrangements with carriers serving ISPs. *Id.* As a result of these trends, UNE rates (adjusted for cost differences) are converging in a more narrow range. *Id.* ¶ 108. Finally, rates have gone down because the relevant costs of provide UNEs have gone down. *Id.* ¶ 70.

Anecdotal Claims of Erroneous Input Determinations by State Commissions in Qwest Territory. Qwest asserts that state commissions have set a variety of cost inputs in UNE pricing cases at levels well below those consistent with TELRIC. These claims reveal more about Qwest than about the efforts of the state commissions.

Before considering the specifics of Qwest's claims, the Commission should be aware that Qwest has little credibility in these matters. In a recent appeal of the Arizona commission UNE rate decision, for example, Qwest informed a federal district court that the loop rates adopted by the Arizona commission were severely understated because they assume "that most of the roads in downtown Phoenix and Tucson are made of dirt."[6] That, of course, was not even remotely true. In fact, the Arizona commission's decision assumed that there are *no dirt* roads in the most densely populated areas of Arizona (including downtown Phoenix and Tucson), that *all* telephone cables in these areas would have to placed under or above existing streets, sidewalks, landscaping and other structures, and that nearly 80 percent of the time that would require cutting and restoring existing asphalt or concrete using the *most* expensive cable placement methods.[7]

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[6] Qwest Opening Br. on the Merits, *Qwest* v. *ACC*, Case No. CIV-02-1626 PHX-SRB, at 116 (D.Ct.Az., filed December 23, 2002).

[7] Response Br. on the Merits, *Qwest* v. *ACC*, Case No. CIV-02-1626 PHX-SRB, at 116 (D.Ct.Az., filed Feb. 28, 2002) (*MN Reply Br.*).

Qwest similarly distorts other state commission records. Qwest, for example, claims that the Minnesota commission adopted an adjustment that the Commission did not adopt in a universal service order. Qwest at 8, n.23.[8] Qwest also says that the commission relied only on "conclusory assertions." Here is what really happened in that proceeding. No party, including Qwest, disputed that the Minnesota commission should compute switching costs based on the switch investment developed by the Commission in 1999 for use in the Commission's universal service cost model. *MN Final Decision* ¶¶ 18-19. And no party disputed that that the amount of digital loop carrier equipment ("DLC") in a forward-looking network would be approximately 57.5 percent. *Id.* ¶¶ 123-26. The undisputed record evidence further showed that the Commission's 1999 switch investment implicitly reflected only 18.3 percent usage of DLC, rather than the 57.5 percent that would exist in a forward-looking network. *Id.* ¶ 125. Accordingly, the Minnesota commission properly rejected Qwest's proposal to make no forward-looking adjustment to the Commission's 1999 switch investment data, because it was clear, based on the undisputed record evidence, that making no adjustment would substantially understate the amount of DLC deployed in a forward-looking network. *Id.*

Qwest also erroneously asserts that the Minnesota commission adopted an "investment expense" based on no documentation. Qwest at 8, n.23, 28. What the Minnesota commission actually did was find that Qwest's studies were flawed and could not be relied upon. It found that those cost studies suffered from "many defects" and "systematically overestimate[d]" the relevant costs, *MN Final Decision* at 17, 19; *see also id.* at 107-08. Indeed, Qwest's proposed loop cost estimates, for example, were "approximately $75 per line more than Qwest's *embedded* loop costs. *Id.* at 18 (emphasis added). Thus, the Minnesota commission held that Qwest's cost

[8] Qwest appears to have missed the irony here. Qwest argues elsewhere in its comments that the Commission should *forbid* state commissions from relying on the findings in federal universal service proceedings. Qwest at 66-68.

models were "unacceptable" and would not be used "unless no other model is available to price a particular element." *Id.* at 19. Accordingly, the Minnesota commission turned to the cost model submitted by the competitors as an alternative to Qwest's flawed cost study.

One of the cost inputs used in the competitors' cost study – the cost of purchasing and installing xDSL equipment – was based on proprietary data obtained from competitors and vendors on the condition that the data would not be disclosed. Qwest argued that the lack of underlying data to support the cost of purchasing and installing xDSL equipment meant that the Minnesota commission was barred from relying on the competitors' cost study, and that the Minnesota commission thus had to use the estimates produced by Qwest's badly flawed non-TELRIC cost study. But the Minnesota commission correctly rejected Qwest's arguments, recognizing that the lack of underlying documentation does "not make the model . . . unverifiable." *MN Final Decision* at 132. On the contrary, the input—the cost of purchasing and installing xDSL equipment—was fully disclosed and transparent, and its accuracy was verified by other witnesses by comparison with other data on the costs of purchasing and installing such equipment. *Id.* Qwest, on the other hand, "despite its greater access to the market, provided no alternative pricing" for the input, a telling omission. *Id.*

Qwest also criticizes the Minnesota commission for adopting the AT&T/MCI non-recurring cost model on the basis of the professional judgment of the CLECs' experts. Again, Qwest fails to note that its own cost studies were not TELRIC-compliant because they "reli[ed] on outdated time studies, and [were] not forward-looking." *MN Generic Cost Decision* ¶ 285. And the Minnesota commission, using its expert judgment, determined that the record confirmed the accuracy of the CLECs' data, noting that the data were based in part on experts that "had experience with numerous local exchange companies including US WEST," and [contrary to

Qwest's studies] the time study determinations were fairly recent. *MN Final Decision* ¶ 278 & n.344 (citing AT&T witness's testimony).

Perhaps the most revealing thing about Qwest's anecdotes is how few there are. During the past eight years, state commissions have issued hundreds of UNE pricing orders and adjudicated tens of thousands of specific input issues. If the handful of examples offered by Qwest are the best examples of allegedly flawed state commission analysis, the TELRIC standard is robust indeed.

***Ad Hominem* Attacks on State Commissions.** Unable to offer any objective evidence that state commissions have systematically misapplied the TELRIC standard, both Qwest and SBC descend to *ad hominem* attacks on the state commissions themselves. Here again, the Bells' criticisms reveal more about their sponsors than their targets.

SBC asserts that state regulators seek to appropriate the incumbents' sunk investment by setting rates that are too low. Aron-Rogerson (SBC) Decl. at 22-23. SBC offers no support whatsoever for this reckless claim. SBC also neglects to explain how, even if state regulators were as corrupt as it suggests, changing the cost standard from TELRIC to reproduction costs would reduce either the incentive or the ability of these renegade regulators to "fudge" costs downward.

Qwest offers the statements of Raymond Gifford, identified only as "former chairman" of the "Colorado commission," for the proposition that state commissions have been "intimidated" by the CLECs into setting UNE prices at levels that "induce entry." Qwest at 11 & n. 31; *see also id.* at 7 n. 22; *id.* at 11-12 n. 34; *id.* at 14 n. 45 (asserting that the TELRIC standard "'forecloses anything resembling a principled answer' to the UNE pricing inquiry"); *id.* at 43 n. 110 (deriding UNE price setting as "unprincipled"); *id.* at 56 n. 136 (describing the efforts of state commissions as "a classic 'race to the bottom'"); *id.* at 63 n. 146 Qwest neglects to

mention that Mr. Gifford is currently the president of the "Progress & Freedom Foundation," a Bell-funded entity.[9]

More important, the Commission does not have to speculate on whether state commissions are carrying out their obligations under the Act. During the past four years, the Commission has had the opportunity to review UNE pricing records by almost every state commission, and has repeatedly commended state commissions for the quality of their work in setting UNE prices. *See Minnesota 271 Order* ¶ 2 ("we wish to acknowledge the effort and dedication of the Minnesota Public Utilities Commission . . . which has expended significant time and effort overseeing Qwest's implementation of the requirements of section 271"); *id.* ¶ 3 (recognizing the "outstanding work of the Minnesota Commission"); *Qwest 9-State Order* ¶ 2 ("Approval of this application, the first one granted for states in the Qwest region, would not have been possible without the extraordinary dedication and creativity displayed by the Colorado Public Utilities Commission . . . the Idaho Public Utilities Commission . . . the Iowa Utilities Board . . . the Montana Public Service Commission . . . the Nebraska Public Service Commission . . . the North Dakota Public Service Commission . . . the Public Service Commission of Utah . . . the Washington Utilities and Transportation Commission . . . and the Wyoming Public Service Commission"); *Qwest 3-State Order* ¶ 2 ("we wish to acknowledge the tremendous efforts of the New Mexico, Oregon and South Dakota Commissions, that were instrumental in Qwest's implementation of the requirements of section 271. . . . [R]egulators in these states have been able to build on the work done by their fellow commissioners in other states to address issues such as pricing, for example, in an efficient manner through individual state proceedings").

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[9] *See* http://www.pff.org/about/supporters.html (identifying BellSouth, Qwest Communications, SBC Communications, Verizon Communications and the United States Telecom Association as "supporters" of the organization).

G. TELRIC Does Not Deter Efficient Investment By Incumbent Or Competitive Carriers.

Finally, the Bells attempt to revive their claim that TELRIC-based rates deter investment in local networks. BellSouth at 18; Qwest at 3-6; SBC at 7-13; Aron-Rogerson (SBC) at 11-17; Verizon at 8-19; Kahn-Tardiff (Verizon) Decl. ¶¶ 7-13, ¶¶ 29-32 (underinvestment); Shelanski (Verizon) Decl. ¶¶ 3-5, 15. This argument is no more valid than when the Supreme Court rejected it two years ago. *Verizon*, 535 U.S. at 504-07, 509-10, 516-22.

The Bells dispute that TELRIC provides them with sufficient returns to invest in new technologies, but this is simply a repackaging of their more general claim that TELRIC is not compensatory, and fails for the reasons stated above. The incumbents have adequate incentives to invest in new facilities where the rates for unbundled access includes a forward-looking, risk adjusted cost of capital and depreciation lives. Willig Decl. ¶¶ 42-43; Willig Reply Decl. ¶ 82. And as the Supreme Court has recognized, TELRIC expressly provides such returns. *See Verizon*, 535 U.S. 519 ("TELRIC itself prescribes no fixed percentage rate as risk-adjusted capital costs and recognizes no particular useful life as a basis for calculating depreciation costs" and, therefore, may be "adjusted upward if the incumbents demonstrate the need"); *id.* at 521 ("TELRIC rates leave plenty of room for differences in the appropriate depreciation rates and risk-adjusted capital costs depending on the nature and technology of the specific element to be priced."). Further, the competition facilitated by TELRIC pricing for UNEs gives incumbents added incentives to improve their networks to avoid losing customers to new entrants. *Verizon*, 535 U.S. 517 n.33 (it is "commonsense . . . that so long as TELRIC brings about some competition, the incumbents will continue to have incentives to invest and improve their services to hold on to their existing customer base").

Equally meretricious is the Bells' claim that TELRIC-pricing is deterring investment by CLECs. First, the implicit premise of this theory—that CLECs are using UNEs instead of

building their own facilities because UNEs are too "cheap"—is demonstrably false. Even when UNEs are priced strictly at TELRIC, CLECs have strong incentive to invest in alternative facilities where feasible, even if doing so costs the CLECs a bit more than leasing the facility from the ILEC. CLECs are understandably reluctant to depend on a supplier of critical inputs that has little incentive to supply those inputs in a commercially reasonable manner. Willig Reply Decl. ¶ 87. This is revealed most starkly by SBC's financial reports, which show a decline in wholesale UNE sales as "positive" for investors.[10]

In all events, whatever merit the sink-or-swim theory of UNE pricing might have possessed was extinguished by the *Triennial Review Order*. There, the Commission eliminated unbundled access to any UNEs that it believed were capable of "multiple competitive supply." *Triennial Review Order* ¶¶ 87 n. 283, 329 n. 974. Indeed, the Commission eliminated access to UNEs even where there were no demonstrated alternatives but where, based on a "business case," bypass could be deemed potentially feasible. *See* 47 C.F.R. § 51.319(a)(5)(ii) (potential deployment of enterprise loops); *id.* § 51.319(d)(5)(iii)(B) (potential deployment of switching); *id.* § 51.319(e)(2)(B)(ii) (potential deployment of dedicated transport).

The Commission need not guess as to these points. Empirical evidence confirms that lower UNE prices translate into increased facilities-based investment in local networks. Employing standard econometric procedures, several studies have directly measured the extent to which incumbent network investment has been impacted by local competition. Willig Decl. ¶¶ 44-45; Willig Reply Decl. ¶ 88. Overall, this evidence shows (within traditional statistical significance intervals) that a reduction in UNE rates causes a significant increase in incumbent

[10] *See* http://www.sbc.com/Investor/Financial/Earning_Info/docs/4Q_03_IB_FINAL.pdf (p. 7); http://www.sbc.com/Investor/Financial/Earning_Info/docs/4Q_03_slide_bw.pdf (p. 11).

LEC investment. *Id.* Overall, the Phoenix Center estimates that there has been a $10 billion consumer welfare gain from unbundling at TELRIC-based rates.[11]

The Bells offer no response to this econometric analysis, but instead proffer a competing analysis by Hazlett, Havenner and Bazelon. *See* Hazlett *et al.* (Verizon) Decl. ¶¶ 11-19. As Professor Willig explains, this analysis is riddled with fundamental economic and statistical errors. For example, Hazlett, Havenner and Bazelon claim to show that UNE-P has dried up investment opportunities because of an increase in the payment of dividends by telephone carriers. According to Hazlett *et. al.*, telephone companies, both incumbents and new entrants, must lack for investment opportunities because if such opportunities existed, then the companies could not afford to pay dividends. *Id.* ¶ 14.

This reasoning is astonishing. It assumes that telephone companies have *no* access to capital markets. According to this view, investment financing from external sources is so expensive that only internal funds may profitably be used to finance even attractive projects. The opposite, of course, is true. Willig Reply Decl. ¶ 98.

Hazlett, Havenner and Bazelon also make several basic statistical errors. *Id.* ¶¶ 99-100. Most egregiously, they have based their conclusion on a model that assumes that neither the cost of UNEs, as embodied in UNE-P prices, nor the cost of facilities-based investment, as embodied in TELRIC prices, plays any role in determining the level of facilities-based competitive carrier investment. This is a fundamental economic error, and one that Dr. Willig's own econometric results empirically refute. It is elementary econometrics that this kind of omission imparts a bias to the estimates of the remaining coefficients. On this basis alone the results obtained by Hazlett *et al.* are facially unreliable.

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[11] *See* Phoenix Center Policy Bulletin No. 8 (Jan. 27, 2004) (available at http://www.phoenix-center.org/PolicyBulletin/PCPB8Final.pdf).

Finally, the suggestion of Verizon witnesses Kahn and Tardiff that wireless and other intermodal competition has made Commission regulation of UNE prices unnecessary is absurd. The Commission expressly rejected those claims in the *Triennial Review Order* (¶¶ 52, 222, 229 230) finding that these alternatives were not remotely sufficient to constrain the ILECs' market power. Moreover, if the Bells seriously feared intermodal competition, they would be trying to *encourage* CLECs to use the ILEC networks and thus retain customers and revenues on the network. The persistent efforts of the Bells to choke off use of UNEs by CLECs is eloquent evidence that the Bells do not in fact regard intermodal competition as a serious threat. Selwyn Reply Decl. ¶¶ 53-56.